EVIDENCE THAT MYOCARDIAL PERFUSION IN SURGICAL REvascularization IS INFLuENCED BY FUNCTIONAL ANATOMY BUT NOT ANATOMY ALONE

Poster Contributions
Hall C
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Session Title: Stable Ischemic Heart Disease: Focus on Surgical Revascularization
Abstract Category: 26. Stable Ischemic Heart Disease: Therapy
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Background: The relationship between a Target Vessel Epicardial Coronary Artery (TVECA) anatomic stenosis and the physiology of the dependent regional myocardial perfusion (RMP) at baseline and post-intervention is understood well enough to impact outcomes in PCI. This relationship has never been studied in surgical revascularization with CABG.

Methods: We used real-time Near-infrared Fluorescence (NIRF) imaging with Perfusion Analysis software to analyze the RMP response to TVECA grafting using anatomic criteria. Anticipating the opportunity to define CABG strategies by functional anatomy criteria, we matched the TVECA SYNTAX anatomy with the clinically-defined ischemia status of the regional myocardium in 67 patients undergoing off-pump CABG. We measured the RMP change, if any, with TVECA grafting and then the global perfusion change from aggregate RMP changes.

Results: By NIRF angiography, all 135 grafts (47% in-situ arterial) were widely patent. The global increase in RMP was categorized into none, marginal (1-20%), or large > 20%). 27 (20%) of 135 grafts had no RMP change. By ANOVA, the same Perfusion Change data were compared to anatomy alone (Left, p=0.194), and to anatomy + clinical functionality (Right, p=0.026) (FIGURE).

Conclusions: The functionality of stenoses impacts the myocardial response to TVECA surgical revascularization. Documenting functional anatomy preoperatively yields a more physiologic revascularization roadmap, and might alter CABG strategy and outcomes.